DEPARTMENT OF NATURAL RESOURCES

CONDITION RANKING FORM – version 3.2 (June 8th, 2018)

Mesic Hardwood Forests – Northern and Central (MHn & MHc)

Evaluators:		**Pre-scoring rank:**
Date:	**County:**	
GPS Coordinates:	**Waypoint #**	
Site Name:	**Site #**	
Previous Releve #	**Previously Identified NPC Type/Subtype:**	
Current Releve #	**NPC Type/Subtype:**	**Growth Stage:**
Extent of Evaluation (circle one): Releve / Polygon / Other		

The Scoring Sheet for condition ranking is on back side. Explanations for some scoring categories are on this page. When categories refer to "expected" conditions, compare a forest to reference sites known to be of the highest quality. When evaluating stands with signs of disturbance, compare the impacts to those of disturbances in the natural regime.

Information about the composition of Native Plant Communities, including tree species likely present at different growth stages, as well as the types and frequencies of natural disturbances, is available in the Field Guides to Native Plant Communities of Minnesota.

Table 1. Calculating an index of deer browse

Mark **PU** if *present and unbrowsed.* Mark **B** if *browsed.*

SPECIES NAME	Circle 1	Circle 2	Circle 3	Circle 4	Circle 5
Species name:	PU / B	PU / B	PU / B	PU / B	PU / B
Species name:	PU / B	PU / B	PU / B	PU / B	PU / B
Species name:	PU / B	PU / B	PU / B	PU / B	PU / B
Species name:	PU / B	PU / B	PU / B	PU / B	PU / B
Species name:	PU / B	PU / B	PU / B	PU / B	PU / B
Species name:	PU / B	PU / B	PU / B	PU / B	PU / B
Species name:	PU / B	PU / B	PU / B	PU / B	PU / B
Species name:	PU / B	PU / B	PU / B	PU / B	PU / B
Species name:	PU / B	PU / B	PU / B	PU / B	PU / B
Species name:	PU / B	PU / B	PU / B	PU / B	PU / B
Species name:	PU / B	PU / B	PU / B	PU / B	PU / B
Species name:	PU / B	PU / B	PU / B	PU / B	PU / B

Count of all marks (PU + B): _____ = **P** | Count of all B marks: _____ = **B**

For 5 circular plots with 1m radius, list all woody species present (P) in browse zone (0.2-1.8m high), and mark which show some browsing (B), including stems browsed in past years, but excluding hare or moose browse. Browse Index = **B/P**

Tree Size Class Distribution

Is the proportion of tree trunks of all species combined in each 10-cm dbh size class (>3cm) similar to what would be expected under a historic natural disturbance regime or is one or more size classes missing? Even young stands should have some large legacies. A size class present to some degree in the form of snags or logs, as may result from natural disturbances like wind or disease, is not "missing." Missing size classes may indicate past logging or a failure of regeneration for a cohort of trees due to grazing or high deer population.

Understory Composition

The best source of information on species composition for each NPC is the Species Frequency and Cover table. This table is not included in the first edition of the Laurentian Mixed Forest Field Guide, but it is available on the DNR Website (www.mndnr.gov/npc). Some stands naturally might not fit the NPC descriptions well, especially for the ground layer.

Deer Browsing

Elevated deer browsing has generally increased graminoids and ferns and decreased forbs and shrubs/tree seedlings, sometimes resulting in a distinct browse line. A healthy level of deer browsing would allow for reproduction of their favored plant species. Calculating a browse index using Table 1 can help determine the level of browsing, but it is not required. Doing more than 5 circular plots (up to 30) would reduce sampling error, especially in forests with a very sparse shrub layer. Try not to bias results by doing circles when you notice browsing.

Invasive Plants

Do not include exotic species that are rare and scattered on the site with declining or stable populations, having very little impact on the composition and function of the NPC.

Earthworms

The Invasive Earthworm Rapid Assessment Tool was developed for hardwood forests in northern Minnesota and Wisconsin. If you do not use the tool, make a note of that.

Soil Compaction

If soil compaction extent is <1%, then severity is "slight to none." Otherwise rate severity by the degree of compaction in the compacted area, not averaged over the entire stand. Soil compaction caused by earthworms is accounted for in the earthworms category.

Snags and Coarse Woody Debris (CWD)

RNV = range of natural variability. When ranking a relevé plot, survey dead wood in larger area. Young stands should have a legacy of various sized snags and logs. As stands age, the number of large snags should decline and the level of decay of large logs should increase. As stands enter old growth, large logs and snags should increase again. Blowdown during stand development will increase the amount of large diameter logs, whereas a surface fire may reduce CWD and increase snags. In general, frequent large logs/snags = 2 points, uncommon = 1, absent = 0.

BONUS: Old Growth

Possible characteristics include: large, old trees of long-lived species; frequent large logs and large snags in various stages of decay; presence of slow-growing, disturbance sensitive plants and lichens; usually with pit and mound topography. A negative exponential "reverse-J" tree size distribution (for all species combined) is associated with undisturbed forests where tree death and regeneration are fairly constant over long periods of time (e.g., MH forests).

SCORING SHEET Assign the best value for each category and sum at the bottom

CANOPY & SUBCANOPY (>2m)

Category	Value Explanation	Value
Size Class/Age Class Distribution	2 = Size class distribution of trees >3cm dbh (all species combined) as expected for NPC growth stage and disturbance history. 1 = One size class is missing. 0 = More than one size class is missing.	Assign value here
Species Composition & Cover	2 = Composition and cover as expected for NPC growth stage and disturbance history, or attributable to soil conditions or geography. 1 = one or two canopy species selectively removed by logging or invasive pests - OR - one species overabundant due to planting or fire suppression. 0 = Noticeably different from expected, but recognizable as type.	Assign value here

SHRUBS & TREE REGENERATION (0 – 2m)

Category	Value Explanation	Value
Species Composition & Cover	2 = Composition and cover similar to expected for the NPC. 1 = Less tree regeneration than expected; dominated by relatively few species; or grazing indicators present (such as prickly shrubs). 0 = Considerably less tree regeneration than expected; dominated by only a few species, sometimes grazing indicators; or several typical woody species absent.	Assign value here
Deer Browse	2 = Browse Index < 0.2; reproduction of favored browse species affected slightly or not at all. 1 = Browse Index = 0.2-0.3; favored spp. moderately impacted. 0 = Browse Index > 0.3; favored spp. severely impacted.	Assign value here
Invasive Woody Plant Species	2 = Invasive species rare or absent. 1 = Invasive species occasional. 0 = Invasive species common.	Assign value here

HERBACIOUS PLANTS (0 – 2m)

Category	Value Explanation	Value
Species Composition & Cover	2 = Plant species composition and cover similar to expected for NPC, or attributable to soil conditions or geography. 1 = Dominated by relatively few species. 0 = Dominated by a few species; several typical species absent.	Assign value here
Invasive Herbaceous Species	2 = Invasive species rare or absent. 1 = Invasive species occasional. 0 = Invasive species common.	Assign value here

HYDROLOGY

	Value Explanation	Value
	1 = Surface hydrology functioning naturally. 0 = Surface hydrology altered.	Assign value here

Notes:

LITTER LAYER AND SOIL

Category	Value Explanation	Value
Earthworm impact on litter, humus, and A-horizon	2 = Rapid Earthworm Assessment Score 1-2, low abundance and impact. 1 = Rapid Earthworm Assessment Score 3, moderate. 0 = Rapid Earthworm Assessment Score 4-5, severe.	Assign value here
Microtopography	1 = Pit-and-mound topography as expected where small-scale windthrow is the predominant natural disturbance. 0 = Less than expected for the NPC and disturbance history.	Assign value here
Soil Compaction Extent	2 = <1% of area compacted. 1 = Trails with altered ground vegetation cover 1-5% of area. 0 = Trails cover >5% - OR - area has been compacted by past logging, tree planting, grazing, plowing, etc.	Assign value here
Soil Compaction Severity	2 = Slight to none. 1 = Moderate. 0 = Severe (most trails are severe).	Assign value here

DEAD WOOD

Category	Value Explanation	Value
Snags	2 = Within RNV for growth stage and history of natural (or mimicked) disturbance. 1 = Amount, sizes, or decay class differs from expected. 0 = Amount, sizes, or decay class differs greatly from expected	Assign value here
Coarse Woody Debris	2 = Within RNV for growth stage and history of natural (or mimicked) disturbance. 1 = Amount, sizes, or decay class differs from expected. 0 = Amount, sizes, or decay class differs greatly from expected	Assign value here

BONUS

Add one for any that apply	Value
1 = Structure and composition indicative of old growth stage	Assign value here
1 = A species especially sensitive to a stressor, such as elevated deer browsing or earthworm invasion, is present and healthy (e.g. orchids, Taxus canadensis, Botrychium mormo).	Assign value here

TOTAL SCORE =

Highest possible score without bonuses is 26

CONDITION RANK: A(≥25) **AB**(22-24) **B**(19-21) **BC**(16-18) **C**(13-15) **CD**(10-12) **D**(≤9)

Rank, if different from scale:

The scale above provides accurate ranks most of the time. Feel free to assign a different rank, and provide an explanation. This information can help improve these ranking guidelines.